

## THYSANOPTERA OF MEXICO AND THE SOUTH. II

D. L. CRAWFORD.

In this paper the remaining new species from the South, including Mexico, Central and South America, Cuba, etc., are described and figured; the fact that only one previously described species was found, and that all the rest were new, shows how little is really known of this group in the South.

### *Euthrips cephalicus* n. sp.

Average length 1.1 mm.; general color, yellow.

Head (Fig. 63A) wider than long, rectangular, somewhat concave at insertion of antennæ; distinctly retracted into prothorax; cheeks parallel with one pair of large postocular spines and several small ones; anterior portion of head between the eyes and in front of the ocelli abruptly depressed, with the anterior ocellus on the vertical plane, and a pair of very large spines on the margin of the depression. Eyes pale yellow, comparatively large and prominent; ocelli very indistinct, larger than facets of eyes; anterior ocellus directed forward, with a small seta on each side. Mouthcone long and pointed, reaching almost to posterior margin of prothorax; maxillary palpi three-segmented. Antennæ (Fig. 63B) about two and one-half times as long as head, moderately slender; segments VI - VIII and apical half of IV, light brown, the rest almost white; basal segment short; II, with a large double tubercle on dorsal surface extending beyond insertion of III, and bearing two very stout, black spines; a bifurcate sensecone on III, and a single one on IV.

Prothorax (Fig. 63A) wider than long, and slightly longer and wider than head, broadly rounded posteriorly; with two large spines on posterior angles, one equally large on anterior angles, an equal pair on anterior margin, and a smaller pair midway on posterior margin; dorsal surface with numerous small spines. Thorax broadest at mesothorax, with two large spines midway on anterior dorsal margin of mesothorax; metathorax with sides slightly converging. Legs (Fig. 63 E, F, G) of medium size, with numerous inconspicuous spines; posterior tibiae, within, with a row of several stout spines, and two longer ones on apical end; legs concolorous with body throughout. Wings (Fig. 63 H) long and comparatively stout, reaching to eighth abdominal segment, uniform light yellow; with two longitudinal veins, the posterior one appearing about one-fourth the wing's length from the base and disappearing before reaching the tip; anterior margin with a row of twenty-three stout spines, anterior vein with twenty-one, and posterior vein with seventeen; posterior margin with a long double row of cilia.

Abdomen moderately slender, spines not prominent on basal segments; ninth segment (Fig. 63 D) with six very long stout spines, and anal segment with four equally long ones; ovipositor large and conspicuous.

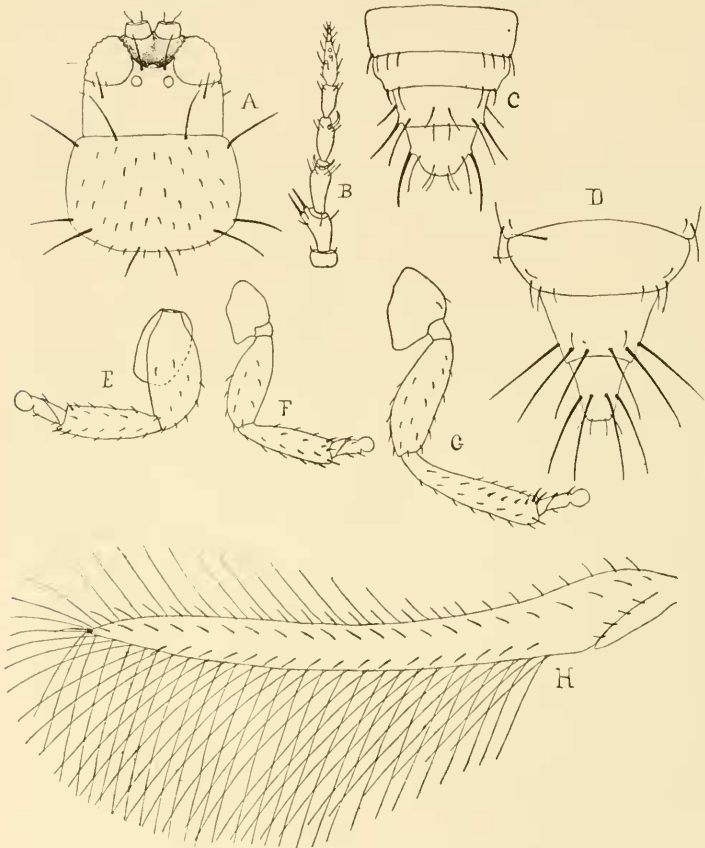


Figure 63. *Euthrips cephalicus*

Measurements: Head, length .10 mm., width .14 mm.; prothorax, length .12 mm., width .18 mm.; mesothorax, width .26 mm.; abdomen, width .28 mm.; total length 1.12 mm. (.98 mm. — 1.24 mm.). Antennae: I, .015 mm.; II, .040 mm.; III, .054 mm.; IV, .045 mm.; V, .034 mm.; VI, .046 mm.; VII, .008 mm.; VIII, .006 mm.; total length, .25 mm. Color almost uniform yellow.

Males much smaller than female, average length .74 mm.; with smaller depression in front of eyes; legs smaller and weaker. Abdomen (Fig. 63 C) rounded at tip; with a pair of very long stout spines on ninth segment, set on a distinct tubercle, and a similar pair on anal segment; four small spines at tip of anal segment.

Described from numerous females and several males.

Food-plants: Several Compositæ, a small native acacia-like tree, a *Solanum*, and several other plants.

Locality: Guadalajara, Mexico (altitude 2000-6000 feet), (Crawford).

This species resembles most closely *E. tritici* Fitch, but in the characters of the head and antennæ and several other details it is markedly different. It is a very common species, found on many flowering plants and trees, and, consequently the characters are not constant within the species; the double spine-bearing tubercle on the second antennal segment is, in some of the mounted specimens, less pronounced than in the illustration (Fig. 63 B); the depression on the vertex and frons is sometimes smaller in extent, but *always* the anterior ocellus is directed forward, and the large pair of spines is on the margin of the depression. The color and the arrangement of the spines is quite constant; in some of the mounted specimens there is an abrupt variation in color to dark brown; as there are several distinct minor characters in these brown specimens, they are described below as a variety of the species.

#### ***Euthrips cephalicus reticulata* n. var.**

General color uniform brown. Average length .97 mm. Entire body surface reticulated deeply; production of second antennal segment present, but not so marked as in the species; depression of vertex less pronounced, but with anterior ocellus directed forward. Spines arranged as in species; wings light brown; legs concolorous with body except fore tibiæ and all tarsi light brown; basal antennal segment and basal two-thirds of II brown; apical third of II, III, IV, and basal half of V yellow; the rest light brown.

Described from two females and three males taken with the species on certain Rosaceæ and Labiatae.

Locality: Guadalajara, Mexico. (Crawford.)

#### ***Dictyothrips reticulata* n. sp.**

Length 1.55 mm.; general color light brown; entire body surface, including legs and basal antennal segments, deeply and finely reticulated.

Head (Fig. 64 A) slightly broader than long, converging somewhat posteriorly, and broadly rounded anteriorly; occiput elevated; cheeks finely serrated, full, not spinose; vertex lower than occiput, elevated and produced between eyes and bearing the anterior ocellus at its apex; front broadly bisulcate, sloping down to insertion of antennæ, slightly produced between basal segments; with six short but conspicuous postocular spines, one behind each posterior ocellus, two behind and one outside of anterior ocellus, and two on the ridge between the sulca. Eyes very large, prominent, slightly bulging, very coarsely faceted and very pilose; ocelli very large, prominent, oval, between

posterior angles of eyes; anterior ocellus on apex of produced vertex and directed forward; posterior ocelli slightly more elevated than the eyes. Mouth-cone very small and weak, scarcely reaching one-third the length of prothorax; maxillary palpi long, three-segmented. Antennæ (Fig. 64 B) very slender, more than twice as long as head, moderately spinose; segment III pedicelate, with a pseudojoint near base; III, IV and VI elongate, III and IV a symmetrically fusiform; V very small; style short, with several long spines; III and IV with

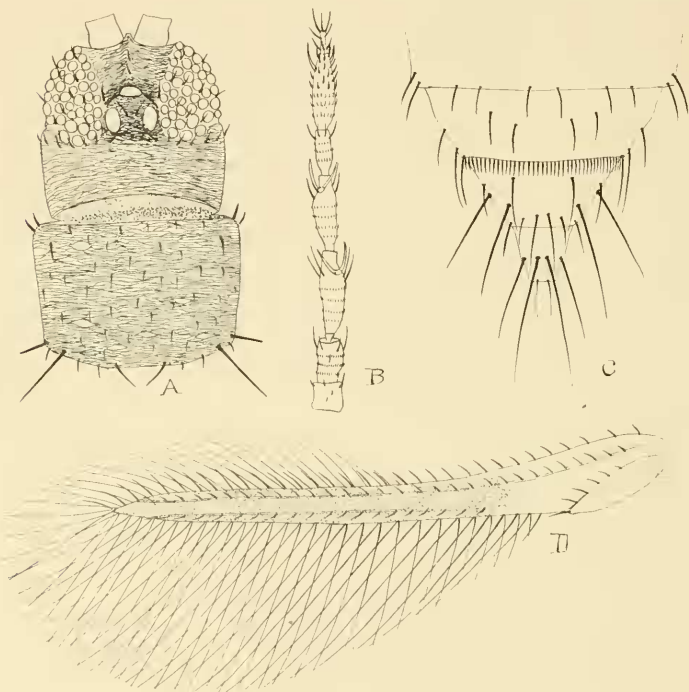


Figure 64. *Dictyothrips reticulata*

a bifurcate sense cone, VI with a single one; antennæ uniform light brown, except base and tip of III and base of IV white.

Prothorax (Fig. 64 A) a little shorter than head, and about seven-tenths as long as broad anteriorly, converging somewhat posteriorly; anterior margin straight, posterior broadly rounded; with one short spine at each posterior angle, and two pair on posterior margin; anterior angles with two short spines only a trifle longer than the numerous spines on dorsal surface. Ptero-

thorax large, broadest across mesocoxae, broadly rounded anteriorly, metathorax tapering slightly to abdomen. Legs medium, very spinose; forefemora not enlarged; femora concolorous with body; tibiae lighter, tarsi yellowish brown. Wings (Fig. 64 D) not very long, reaching about to seventh abdominal segment; basal one-fourth clear, the rest light brown; posterior vein extending from apical margin of clear area to near tip, with twenty spines; anterior vein with twenty-nine spines, anterior margin with thirty-two spines increasing in length toward the tip, and a short fringe of cilia on apical half; posterior margin with a long double fringe of cilia. Posterior wings clear white with a narrow longitudinal median stripe from base to near tip.

Abdomen large, moderately broad, broadest across fourth and fifth segments; with several long spines on each posterior angle and margin; last three segments (Fig. 64 C) abruptly converging to tip; posterior dorsal margin of eighth with a row of long sharp comb-like spines; nine and ten with several very long stout bristles on dorsal surface.

Measurements: Head, length .16 mm., width .18 mm.; prothorax, length .145 mm., width anteriorly .205 mm., posteriorly .19 mm.; pterothorax, width .27 mm.; abdomen, width .29 mm.; total length 1.55 mm. Antennae: I, .026 mm.; II, .040 mm.; III, .087 mm.; IV, .071 mm.; V, .043 mm.; VI, .072 mm.; VII, .009 mm.; VIII, .014 mm.; total .37 mm.

Described from one female taken on blossoms of a native Acacia-like tree. Locality: Guadalajara, Mexico. (Crawford.)

#### *Thrips abdominalis* n. sp.

Average length 1.0 mm.; general color light brown; body surface reticulated; all spines very inconspicuous.

Head (Fig. 65 A) about one and one-half times as broad as long, angular, markedly retractile, reticulated posteriorly; frons vertical; cheeks parallel; with no prominent spines, but several very small and inconspicuous ones near the eyes and ocelli. Eyes large, prominent, bulging, finely faceted, and slightly pilose; anterior ocellus on frons and directed forward; posterior ocelli on the sides of an elevated portion between the eyes and directed outwardly, slightly higher up than the eyes. Mouthcone short and blunt, reaching one-third the length of prothorax; maxillary palpi three-segmented. Antennae (Fig. 65 B) more than twice as long as head, quite stout, with spines short and inconspicuous; with a sense cone on segments III and IV, and several small sensory areas on VI; II distinctly stouter than the rest, III pedicellate; V very broad at apical end; VII comparatively long; I, II, IV, VI and VII concolorous with body, III and V somewhat lighter.

Prothorax (Fig. 65 A) one and one-half times as long as head, and one and one-fourth times as long as broad, posteriorly; sides strongly divergent, with angles rounded; with no prominent spines, but a row of ten very small spines on anterior dorsal margin, and eighteen on posterior margin, two on each posterior angle larger than the rest; with a distinct dark emargination and chitinous thickening on each side above the fore-coxae. Legs small, short, with no conspicuous spines, except two at tip of posterior tibiae; fore-femora

(Fig. 65 C) somewhat enlarged. Wings (Fig. 65 E) narrow, moderately long, reaching to seventh abdominal segment, somewhat broadened at base; posterior longitudinal vein extending from near base to near tip, with seven short spines, the first one about opposite the sixth spine on anterior vein; anterior vein with either eight or nine short spines, six on basal half and either two or three on distal half, the number varying on the same insect sometimes; when there are three the first one occurs near the center of the vein, the third one near the tip, and the second about midway between; when only two are present the one near the center is wanting, and the two are arranged

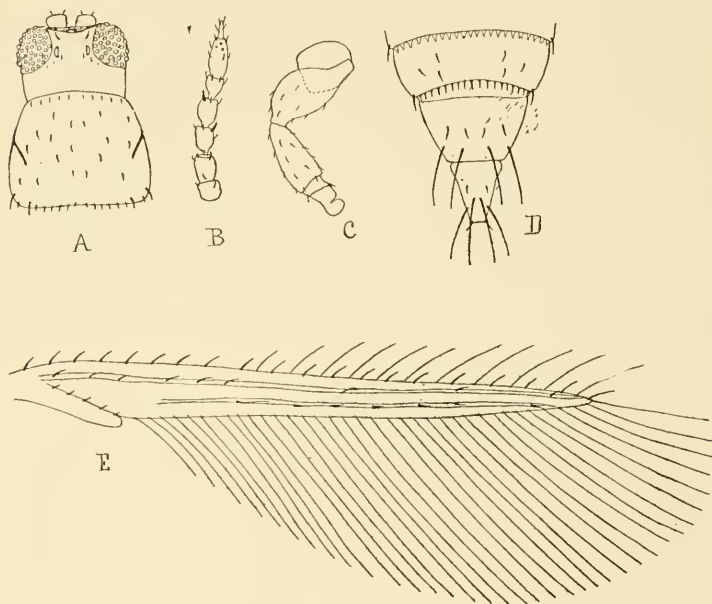


Figure 65. *Thrips abdominalis*

as the distal two when three are present; anterior margin with a row of twenty short spines, and a row of short cilia, on distal three-fifths of margin; posterior margin with a row of long cilia; color of fore-wings light brown, with a small more or less clear area near base between third and fourth spines on anterior vein; posterior wings almost clear, with a light brown stripe in center, extending through basal half of wing.

Abdomen usually slender, sometimes comparatively stout; with a row of distinct sharp serrations on posterior margin of segments one to seven inclusive; eighth with longer and sharper teeth; almost no spines on abdomen

except on two anal segments; four comparatively stout spines on ninth (Fig. 65 D), and four on anal segment near tip; ovipositor weak and inconspicuous.

Measurements: Head, length .064 mm.; width .11 mm.; prothorax, length .12 mm., width anteriorly .10 mm., posteriorly .15 mm.; mesothorax, width .22 mm.; abdomen, width (average) .24 mm.; total length 1.02 mm. (.84 — 1.20 mm.) Antennæ: I, .019 mm.; II, .024 mm.; III, .026 mm.; IV, .027 mm.; V, .020 mm.; VI, .037 mm.; VII, .018 mm.; total .17 mm.

Described from numerous females.

Food-plants: Various Compositæ, Solanum, Daucus sp. (?), and others. Locality: Guadalajara, Mexico. (Crawford.)

This species resembles somewhat *Thrips albopilosa* Uzel, (1) in having very inconspicuous spines, though they are not white as in that species; (2) in the general arrangement of spines on the fore-wing; (3) in the shape of the fifth antennal segment. Although these resemblances are unmistakable, still this can not be the same species by any means.

#### ***Phloeothrips raptor* n. sp.**

Average length about 2 mm.; general color brown.

Head (Fig. 66 A) rather large, about one and one-half times as long as broad, distinctly narrowed both posteriorly and postocularly; broadly rounded in front; cheeks arched, with several conspicuous setigerous tubercles; vertex elevated and produced, but not attaining the insertion of the antennæ; with one pair of long knobbed postocular spines, basal half of spine dark, distal half almost transparent; all other cephalic spines small. Eyes large, prominent, slightly bulging, finely and closely faceted, pigment transparent white; ocelli rather large, but indistinct; anterior ocellus directed forward on apex of produced vertex; posterior ocelli not contiguous with inner margin of eyes. Mouth-cone short, reaching about three-fourths the length of prothorax; labrum produced, very pointed at tip. Antennæ (Fig. 66 C) about one and one-half times as long as head, and slightly more than twice the width of head, rather stout and very spinose, but the spines not conspicuous; several long thick sense cones on segments III-IV; III-VII pedicellate, III and IV pyriform, V and VI fusiform, VII and VIII connate; I and basal half of II concolorous with body, the rest uniform light brown, III and IV transparent at extreme base.

Prothorax (Fig. 66 A) slightly more than twice as wide (including coxae) as long, and a little over half as long as head; with long light colored, knobbed spines on posterior and anterior angles and one pair midlaterally; a smaller blunt pair on both anterior and posterior margins. Mesothorax a little wider than prothorax, widest across mesocoxae; pterothorax reticulated. Wings of medium length, slender, transparent; with three long spines on basal posterior margin; posterior wings with a brown stripe in the center, extending from base to near tip. Legs rather long and stout, sparsely spinose; forelegs (Fig. 66 E) apparently rapatorial; forefemora enlarged, with a conspicuous depression on inner side extending from base to tip (evidently a sheath for the tibiae), with the margins of the depression finely toothed; foretarsi with a large sharp tooth.

within, much smaller, however, than in the male; no conspicuous spines on fore-legs; femora, meso- and posterior tibiae concolorous with body, foretibiae and all tarsi light brown.

Abdomen long and slender, equally broad from base to fifth segment, and from there tapering evenly to ninth, which is broadly rounded at the tip; abdominal spines on segments one to seven knobbed; tube slightly more than half as long as head, with several small spines on dorsal surface; four long spines on posterior dorsal margin of ninth segment, and four extremely long spines at tip of tube, and several shorter ones.

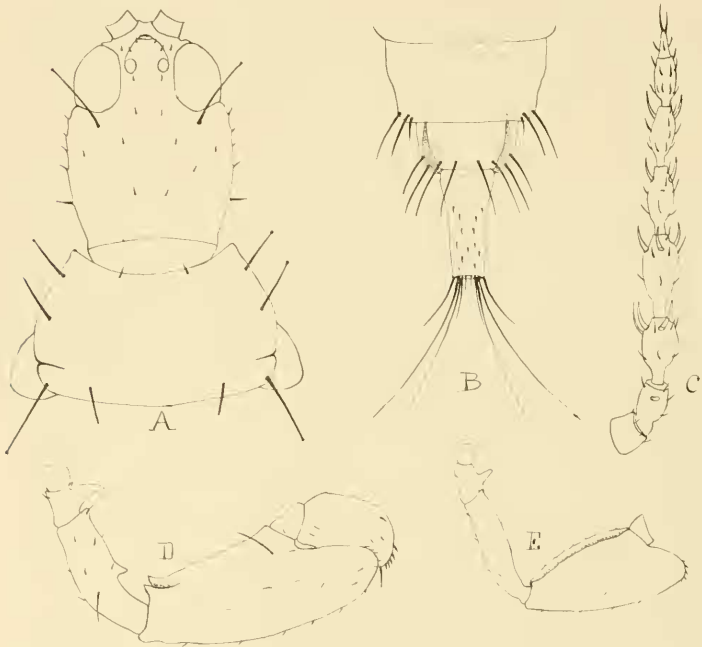


Figure 66. *Phloeothrips raptor*

Measurements: Head, length .27 mm., width .18 mm.; prothorax, length .16 mm., width .35 mm.; pterothorax, width .36 mm.; abdomen, width .32 mm.; tube, length .15 mm., width, at base .06 mm., at tip .04 mm.; total length 2.09 mm. Antennae: I, .030 mm.; II, .044 mm.; III, .065 mm.; IV, .081 mm.; V, .069 mm.; VI, .052 mm.; VII, .049 mm.; VIII, .026 mm.; total length .41 mm.

Males fully as large as female, and more powerful; similar in every re-



spect except the following: Spines on cheek much larger and more numerous; forelegs (Fig. 66 D) immense in proportion to female; forefemora with two sharp tooth-like projections at the tip, within, and a depression between them; foretibiae with a prominent anteriorly directed tooth near the base, within; foretarsi with an immense sharp tooth on inner side; forefemora and foretibiae each with one long spine, all other spines very small. Abdomen about as broad as in female, but tapering more from seventh segment to tube; tube (Fig. 66 B) with a distinct and large scale at base, bearing two large spines at each upper margin. Measurements about the same as in female.

Described from one female and one male, taken in sweeping shrubbery.

Locality: Guadalajara, Mexico. (Crawford.)

This species is very close to *Ph. uzeli* Hinds, especially in respect to the forelegs of the male; but the two species differ sharply in the form of the head, in the shape and form of the antennae, in the distinct depression in the forefemora of the female, and in having a scale at the base of the tube in the male. But *Ph. raptor* is congeneric with *Ph. uzeli* Hinds, although differing so sharply from it, and the generic description should be altered accordingly.

#### ***Liothrips umbripennis mexicana* n. var.**

This variety is very similar to the species in many respects; only the diagnostic characters are given here.

Anterior ocellus with a small spine on each side. Antennae about one and three-fourths times as long as head; only segment III and basal half of IV yellow, the rest dark brown to black. Facets of eyes moderately large. Prothorax (including coxae) about twice as wide as long. Forewings clouded very light brown instead of black, with a conspicuous vein at base bearing three long spines, and extending about one-fourth the wings' length. Forefemora distinctly enlarged; meso- and posterior tibiae with a very long, stout, blunt spine near tip; all tarsi with a conspicuous fringe of spines on apical margin of both segments; males with a stout terminal hook; female tarsi unarmed.

Measurements: Head, length .26 mm., width .19 mm.; prothorax, length .14 mm., width .30 mm.; pterothorax, width .38 mm.; abdomen, width .42 mm.; total length 1.8 mm. Antennae: I, .027 mm.; II, .052 mm.; III, .082 mm.; IV, .077 mm.; V, .075 mm.; VI, .067 mm.; VII, .059 mm.; VIII, .028 mm.; total .46 mm.

Described from five females and four males, taken on galls of oak, elevation 10,000 feet; it is not at all certain that this species has anything to do with the formation of the galls.

Locality: San Pedro Mountains, near Guadalajara, Mexico. (Crawford.)

#### ***Liothrips bakeri* n. sp.**

Average length 2.7 mm.; general color dark brown to black, thorax lighter; entire body surface, including femora and tibiae, conspicuously reticulated.

Head (Fig. 67 A) fully one and one-half times as long as broad, subrectangular, finely reticulated, sparsely spinose; vertex elevated and produced beyond insertion of antennae, and bearing the anterior ocellus at its apex;

cheeks usually parallel, sometimes converging slightly posteriorly, serrated, and somewhat spinose; postocular spines long, broadened and flattened at tip. Eyes large, prominent, bulging, coarsely and closely faceted, pigment whitish; ocelli large, distinct, oval, placed well forward; anterior ocellus at apex of produced vertex and directed forward; posterior ocelli not contiguous with inner margin of eyes. Mouthcone very large and powerful, almost rectangular, square at tip, and reaching almost to posterior margin of prothorax; maxillary palpi extremely short. Antennæ (Fig. 67 B) less than twice as long as head (about one and two-thirds), moderately slender and scarcely visibly spinose;

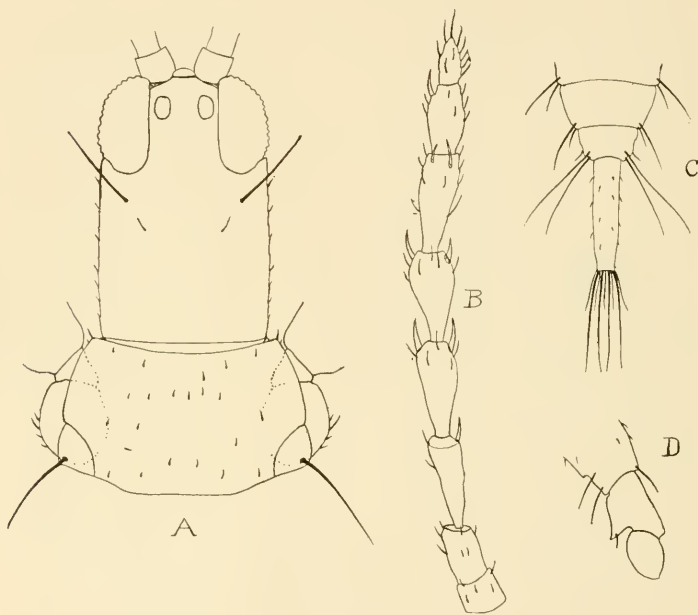


Figure 67. *Liothrips bakeri*

segments I and II concolorous with body, the rest lemon yellow, VII and VIII usually slightly darker; III-V almost transparent at base; antennal spines yellow and very inconspicuous; III-VII with transparent sense cones; I and II subrectangular, III-V clavate, VI and VII fusiform, VIII depressed, broad at base and pointed at tip.

Prothorax (Fig. 67 A) slightly more than half as long as head, and (including coxae) about twice as wide as long, (excluding coxae) not very much broader than head; with one pair of long spines at posterior angles and no others; dorsal surface with several short spines. Mesothorax very

broad, sides parallel; metathorax converging to abdomen; thorax, especially laterally, deeply reticulated. Legs moderately long and slender, sparsely spinose; all tibiae scarcely spinose; foretarsi (Fig. 67 D) with a large setigerous tooth; foretibiae and all tarsi light yellow, the rest concolorous with body. Wings large, heavy, powerful, uniformly broad throughout, extending to posterior margin of seventh abdominal segment; clear white, except, occasionally, a light brown stripe through center of wing in basal half; fringe long; posterior fringe of forewing, subapically, double for about twenty-one cilia.

Abdomen long, slender, broadest at base and converging uniformly to tube (often parallel from base to segment six, then converging to tube); with two spines at each posterior angle of segments one to eight, and two very long ones on nine; tube (Fig. 67 C) longer than head, very slender and almost parallel except at tip; with four spines at tip almost as long as tube.

Measurements: Head, length .31 mm., width .205 mm.; prothorax, length .17 mm., width (including coxae) .37 mm.; mesothorax, width .48 mm.; abdomen, width .36 mm.; tube, length .37 mm., width at base .08 mm., at tip .06 mm.; total length 2.73 mm. (2.64 — 2.82). Antennae: I, .029 mm.; II, .051 mm.; III, .080 mm.; IV, .082 mm.; V, .078 mm.; VI, .086 mm.; VII, .060 mm.; VIII, .041 mm.; total .52 mm.

Males smaller and more slender than females; tarsal tooth only a little larger than that of female; abdomen exceedingly slender; tube shorter than that of female; with a scale at base of tube.

Described from numerous females and males.

Food plant: galls on leaves of *Ficus nitida* and flowers of *Ficus religiosa*.

Localities: Pinar del Rio, Cuba (C. F. Baker), and Havana, Cuba (Dr. Santos Fernandez).

I name this species for Prof. C. F. Baker, who has contributed many specimens for this study, and in many ways has given me much assistance.

#### ***Liothrips meconnelli* n. sp.**

Average length 2.28 mm.; general color dark brown to light brown.

Head (Fig. 68 B) about one and seven-tenths times as long as broad, sparsely and inconspicuously spinose; with a pair of rather short postocular spines; cheeks subparallel, converging slightly posteriorly; vertex produced over insertion of antennae, with the anterior ocellus at the apex, overhanging. Eyes moderately large, finely and closely faceted, prominent, but not bulging; ocelli large, round, pale white, situated well forward; anterior ocellus directed forward; posterior ocelli at the base of the produced vertex and nearly contiguous with inner anterior margin of eyes. Mouthcone rather short, reaching three-fourths the length of prothorax, midway between forecoxae; labrum sharp. Antennae (Fig. 68 C) about one and one-fourth times as long as head, slender, moderately spinose; segments III and VI with one sense cone and IV and V with two; VII and VIII connate; I and base of II concolorous with body, apical

half of II and of V, and VI-VIII light brown; III, IV and basal half of V yellow, IV clouded at tip. In one specimen used in this study, the left antenna is six-segmented, while the other is normally eight-segmented (Fig. 68 D); this is apparently caused by the union of segments IV-VI to form one long irregular segment.

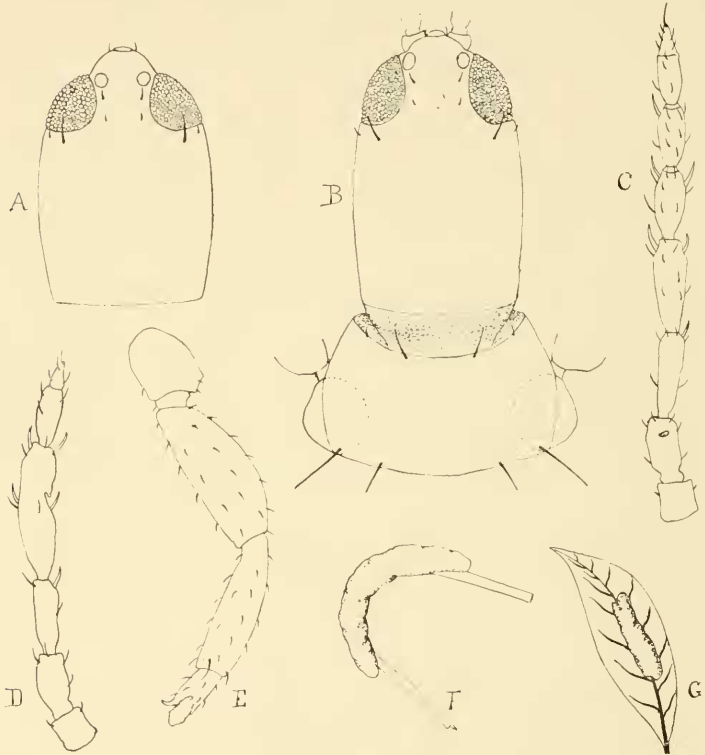


Figure 68. *Liothrips mcconnelli*

Prothorax (Fig. 68 B) about twice as wide as long, and two-fifths as long as head; with one pair of long blunt spines on posterior angles, one pair on posterior margin, and two pairs, one very small, on anterior margin; mid-laterals wanting. Pterothorax large, broadest across mesocoxae, converging posteriorly and anteriorly; thorax somewhat reticulated. Legs long and slender, concolorous with body throughout; forefemora (Fig. 68 E) only slightly

enlarged, briefly spinose; with a terminal tarsal hook in both sexes; middle and posterior tarsi with a fringe of spines on apical margin of both segments. Wings medium, reaching to seventh abdominal segment, clear from base to tip, very slightly narrowed at the middle; posterior fringe, subapically, double for about seven cilia.

Abdomen long and slender, tapering evenly from base to tip; spines not conspicuous; tube short, less than half as long as head, converging toward tip; with a few comparatively short spines at tip of ninth segment, and six short stout spines at tip of tube, and a few shorter and more slender ones also.

Measurements: Head, length .31 mm., width .18 mm.; prothorax, length .12 mm., width (including coxae) .23 mm.; pterothorax, width .32 mm.; abdomen, width .36 mm.; tube, length .13 mm., width, at base, .065 mm., at tip .035 mm.; total length 2.28 mm. Antennae: I, .030 mm.; II, .055 mm.; III, .071 mm.; IV, .077 mm.; V, .061 mm.; VI, .050 mm.; VII, .041 mm.; VIII, .028 mm.; total .39 mm.

Males smaller, but relatively stouter than female; head (Fig. 68 A) distinctly shorter, about one and four-tenths times as long as broad; terminal tarsal hook larger in male; prothorax relatively broader, abdomen more slender; tube almost alike in both sexes; with a closely lying scale at base of tube.

Measurements: Head, length .24 mm., width .17 mm.; prothorax, length .12 mm., width .26 mm.; pterothorax, width .32 mm.; abdomen, width .34 mm.; total length 2.11 mm.

Described from four females and four males, taken from galls (Fig. 68 F, G) on the stems and leaves of a certain bignoniaceous shrub, and also from sweepings on other shrubs.

Locality: Guadalajara, Mex. (Crawford).

I name this species for Mr. R. A. McConnell, who accompanied me on an expedition to Mexico in July-September, 1909.

This species could have been included in *Leptothrips* Hood about as truly as in *Liothrips*, which shows how much of a line of true demarcation there is between these two genera. The diagnostic characters of *Leptothrips*, distinguishing it from *Liothrips*, are given by Hood as being "the much slenderer form, the longer head, the more bulging eyes, the shorter mouthcone, the weaker, slenderer wings which are distinctly narrowed at the middle." This group of characters, taken together, might be enough to erect a new genus on, but one can see at a glance that such characters could hardly be constantly associated. In *Liothrips mcconnelli* there are the combined characters of both genera: of *Leptothrips*—the slender form and relatively long head of the females, and a short mouthcone; of *Liothrips*—the relatively stouter form and shorter head of the males, eyes not at all bulging, while the wings are only slightly constricted at the middle. Again, in *Liothrips bakeri* there are still further complications; this species has the slender form, rather long head, and bulging eyes characteristic of *Leptothrips*, and broad wings not constricted, and the large mouthcone characteristic of *Liothrips*. The constriction of the wings, therefore, is the only character presented, which is of generic value, and this

is very apt to be a poor one, for the simple reason that it is often obscured by the doubling or folding of the wings, and in case there were but a few specimens available, one would be at a loss where to place the new species. All the other characters presented are purely relative, and until diagnostic generic characters can be found which are not mere relative proportions, the mean average of which may easily be possessed by a species, no group of species ought to be separated as a genus. If they are separated by such characters, the inevitable result is *confusion*; it is scarcely scientific to have to "toss up" to determine in which of two genera a certain species belongs. As an illustration of such confusion, *Leptothrips aspersus* has been placed in three different genera, and may yet end up in *Liothrips* where it rightfully belongs.

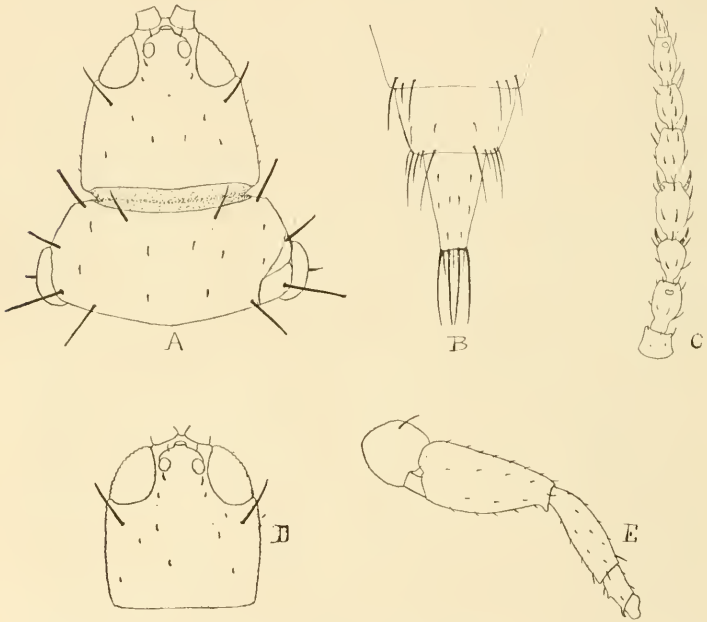


Figure 69. *Anthothrips variabilis*

***Anthothrips variabilis* n. sp.**

Average length 1.6 mm.; general color light brown to dark brown, occasionally black.

Head variable in form; usually very slightly longer than broad (Fig. 69 D), subrectangular, rounded somewhat anteriorly; occasionally the head is

slightly broader than long, and more rectangular, and sometimes it is *distinctly* longer than broad; very seldom the head is more or less narrowed anteriorly (Fig. 69 A)—partially caused by the collapsing of the eyes; cheeks full, sparsely spinose; vertex slightly elevated, and distinctly produced, but not attaining the insertion of the antennae; postocular spines moderately long, and blunt at the tip. Eyes medium, finely faceted and slightly pilose, pigment almost white; ocelli large and distinct; anterior ocellus on apex of produced vertex and directed forward; posterior ocelli not quite contiguous with inner anterior margin of eyes. Mouthcone short and blunt, scarcely reaching half the length of prothorax. Antennae (Fig. 69 C) about twice as long as head, very stout and thickly, but briefly, spinose; segments II-VII distinctly pedicellate and subglobose; II-V with spotted sense cones, or sometimes transparent; I, base of II, and VII and VIII concolorous with body, intermediate segments yellowish brown or lemon yellow.

Prothorax (Fig. 69 A) including coxae, twice as wide as long, and about seven-ninths as long as head; with all the usual prothoracic spines present, long and blunt at tip; dorsal surface slightly spinose. Pterothorax widest across mesocoxae, converging both anteriorly and posteriorly, partially reticulated. Wings moderately long, broadest at base, and distinctly narrowed beyond the middle like a drawn-out shoesole; scale and extreme base light brown; with a short median vein at base, bearing three long spines and one short one; posterior fringe double subapically for eight cilia. Legs medium, moderately stout, sparsely spinose; foretarsi (Fig. 69 E) with a small tooth near the middle, within, and a terminal tarsal hook; foretibiae and foretarsi light yellow, the rest concolorous with body.

Abdomen long, slender, very weak, tapering evenly from base to tip; with two prominent spines on each posterior dorsal angle; tube (Fig. 69 B) about as long as prothorax, seven-ninths as long as head, converging toward tip; with six long spines at tip, and several shorter ones.

Measurements: Head, length .17 mm., width .165 mm.; prothorax, length .13 mm., width .26 mm.; pterothorax, width .31 mm.; abdomen, width at base .32 mm.; tube, length .13 mm, width at base .05 mm., at tip .03 mm.; total length 1.64 mm. Antennae: I, .024 mm.; II, .047 mm.; III, .038 mm.; IV, .050 mm.; width .031 mm.; V, .049 mm.; VI, .040 mm.; VII, .042 mm.; VIII, .024 mm.; total .33 mm.

Males smaller than females, but similar in nearly all respects; abdomen more slender, tube shorter; average length of male 1.46 mm.

Described from numerous females and several males.

Food plants: *Celosia*, *Dodder*, and a native tropical creeping vine.

Localities: Santiago de las Vegas, Cuba (C. F. Baker); Managua, Nicaragua (C. F. Baker), and Guadalajara, Mexico (Crawford).

The abdomen was described as being weak, because of the fact that in many, perhaps the majority, of the specimens used in this study the abdomen is constricted in several of its basal segments, probably by the action of the reagents used in the preparation of the mounts.

***Idolothrips angusticeps* n. sp.**

Average length 5.28 mm.; general color deep black; entire body surface, including femora and tibiae, finely reticulated.

Head (Fig. 70 A) more than two and one-half times the width across eyes; with numerous tuberculous serrations on dorsal and lateral surfaces; with numerous short, stout spines, and two pairs of very long ones, one pair in front of the posterior ocelli, and the other postocular, smaller; head about as wide posteriorly as across eyes, constricted somewhat behind the eyes; vertex produced triangularly over insertion of antennae, with the anterior ocellus on the apex. Eyes moderately large, bulging, finely faceted and not pilose, pigment yellow; ocelli small, indistinct; posterior ocelli not contiguous with inner margin of eyes; anterior ocellus directed forward, beyond insertion of antennae. Mouthcone short, broadly rounded at tip, scarcely reaching to posterior margin of prosternum; maxillary palpi two-segmented, the basal joint very short. Antennae (Fig. 70 F) almost one and one-third times as long as head, very slender; two basal segments comparatively short and thick, II with a sense area near tip; III-V elongate, clavate, III longest, with several long spines on apical half and one long sense cone near tip; IV and V with several long spines and several transparent, but prominent, sense cones near tip; VI-VIII fusiform; VI and VII with several long spines and one sense cone on each; VIII with a longitudinal row of six spines, and one long spine at tip; I and basal half of II concolorous with body; apical half of II and all but the tip of III, basal three-fourths of IV and basal half of V yellow; tip of III and IV light brown, apical half of V and VI-VIII dark brown.

Prothorax (Fig. 70 A) about half as long as wide, including coxae, and two-fifths as long as head; coxae conspicuously protruding, with one stout, black spine on each coxa, without, and one on posterior angles of prothorax; a few small spines on dorsal surface, and three small ones in front of the coxae; membranous portions of prothorax conspicuous. Mesothorax distinctly wider than prothorax, with a few conspicuous spines; with a faceted spiracular (?) plate on each anterior angle. Legs long and very spiny; fore-femora (Fig. 70 G, male) enlarged, prolonged posteriorly over trochanter; foretibiae with numerous conspicuous spines, and one extremely long one near base; foretarsi (Fig. 70 D) within, with a sharp tooth, bearing two spines; middle and hind legs very slender, long and spinose; posterior tibiae (Fig. 70 E) in both sexes with a long and *exceptionally* stout, black spine near tip; meso- and posterior tarsi (Fig. 70 E) with a fringe of cilia-like spines on the entire distal margin of both segments; all bladder-like appendages easily retractile; femora black, tibiae brown, yellow at tip, tarsi yellow. Wings clear white, comparatively short, with a long fringe on both margins; forewings with a brown longitudinal stripe in the center extending from base to middle of wing, and a few spines at base of wing.

Abdomen long and slender, widest at segments two to four; with two long spines at each posterior angle, and a few small ones on dorsal surface; ninth segment (Fig. 70 B) with several long, slender spines on posterior margin;



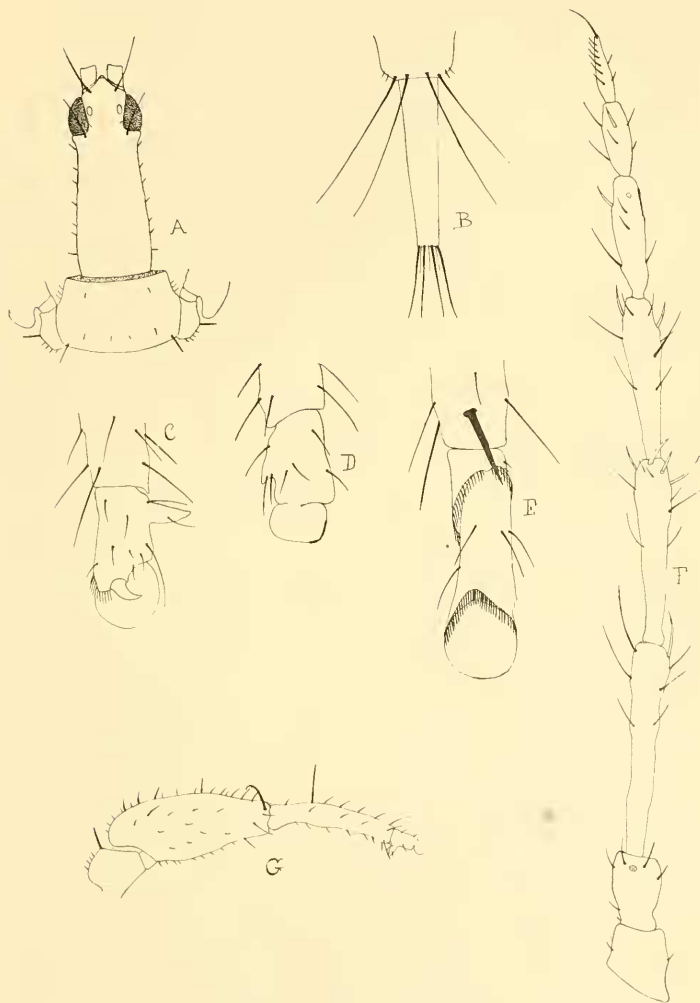


Figure 70. *Idolothrips angusticeps*

tube fully three-fourths as long as head, slender, slightly converging toward tip; with several long, stout bristles at tip.

Measurements: Head, length .68 mm., width .26 mm.; prothorax, length .29 mm., width, including coxae, .56 mm.; mesothorax, width .67 mm.; abdomen, width .82 mm.; tube, length .53 mm., width at base .11 mm.; total length 5.28 mm. (4.32 — 6.24 mm.) Antennae: I, .074 mm.; II, .072 mm.; III, .22 mm.; IV, .17 mm.; V, .15 mm.; VI, .12 mm.; VII, .075 mm.; VIII, .065 mm.; total .94 mm.

Males fully as large as females, sometimes larger; antennae somewhat longer; forefemora (Fig. 70 G) with a long curved, prehensile spine at tip, within; foretarsi (Fig. 70 C) with an exceptionally long, stout tooth near base, within, and another smaller, curved one at tip; with a partial fringe of spines at tip of second tarsal segment; bladder of foreleg easily retractile, probably to facilitate the use of apical tooth. Abdomen very slender, much more so than in female; tube and anal spines distinctly shorter than in female.

Described from fifteen females and seventeen males, taken, mostly, in sweepings of various tropical shrubbery; some were found by the writer on the under surface of leaves of a common tropical vine.

Localities: Belize (James D. Johnson); Havana, Cuba (C. F. Baker); San Marcos and Chinandega, Nicaragua (C. F. Baker), and Guadalajara, Mex. (Crawford).

This giant species is well distributed throughout the American tropics; the specimens in the writer's collection, from these various localities, are almost identical in every respect. There are minor variations, however, such as a difference in the relative length of the third antennal segment; the illustration (Fig. 70 C) represents the average. The spines on the legs and abdomen, also show a variation in length and color, some being black, others light, and still others of intermediate shades.

This species resembles *Megalothrips* (?) *spinosus* Hood (really an *Idolothrips*), but differs in the arrangement of the cephalic and prothoracic spines, the shape of the head anteriorly, and, in general, in the relative proportions; because of this resemblance and its resemblance to still other members of the genus *Idolothrips*, it would seem reasonable to refer this to *Idolothrips spinosus*. In all probability, the males of *I. spinosus* will be found to have a large tarsal tooth, just as the males of *I. angusticeps* have a larger tooth than the female.